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this respect, Dr. Schnabel has attained success.

The second edition has been largely rewritten, as may be appreciated by the increase of pages, from 873 to 1,123, and of illustrations, from 569 to 715. As a whole, the book is reliable and should be in the hands of all students of metallurgy or metallurgical chemistry and all earnest workers in the practise of the art. The material is sufficiently comprehensive to give a thorough review of present metallurgical practises and the history of their development from early times.

JOSEPH STRUTHERS.

NEW YORK,

December 23, 1905.

SOME RECENT BOOKS RELATING TO ANALYTICAL CHEMISTRY.

*A Text-book of Chemical Arithmetic.* By H. L. WELLS, M.A., Professor of Analytical Chemistry and Metallurgy in the Sheffield Scientific School of Yale University. New York, John Wiley & Sons. Pp. vii + 169. 12mo. \$1.25.

*A Manual of Qualitative Chemical Analysis.* By J. F. McGREGORY, Professor of Chemistry and Mineralogy in Colgate University. Boston, Ginn & Co. Pp. xiv + 133. \$1.00.

*Techno-Chemical Analysis.* By Dr. G. LUNGE, Professor at the 'Eidgenossische Polytechnische Schule' at Zurich. Authorized translation by ALFRED I. COHN, author of 'Indicators and Test Papers,' etc. New York, John Wiley & Sons. Pp. vii + 135. 12mo. \$1.00.

*Wells's Chemical Arithmetic.*—The subject is treated under three general heads: 'Calculations Relating to Weights,' 'Calculations Relating to Gases' and 'Calculations Relating to Volumetric Analysis.' These chapters are divided into sections according to the special character of the problems, and the solution of each kind of problem is illustrated by examples. In addition, a number of problems to be solved are added, the answers to which are placed in the back part of the book. One of the most important features is the first chapter on approximate numbers. Those who have watched the average student carry out the calculations to eight or ten decimals when

the result is defined to one or two decimals will appreciate this excellent presentation of the subject. Indeed, all through the book this matter is kept before the student and in many cases the last significant figure of a result is underscored to call attention to its being affected with uncertainty. There are also to be found in this chapter several pages on abbreviated multiplication and division and on the use of logarithms.

The book is designed for students of quantitative analysis and contains little that does not bear directly on analytical calculations. Arithmetical methods are used almost entirely. This the experience of the reviewer is against, as he has always found algebraic methods clearer and more concise. There is no section devoted to calculations involving the density of solutions, which must be looked upon as a serious omission in a work of this sort.

An appendix contains a small list of the usual tables and a table of five-place logarithms.

*McGregory's Qualitative Analysis.*—In the preface the author states that his aim is to strike between the larger works of the Fresenius type and the abbreviated texts. This would seem to be the aim of most authors of recent treatises on qualitative analysis, for the book at once impresses one as being of the same general size and shape as half a dozen others.

The treatment of the subject is also the conventional one as opposed to some of the later works that embody physical-chemical facts and speculations in explanation of the reactions involved. In arrangement, however, some special features are to be seen. For instance, the usual characteristic reactions are given for all the metals and non-metals before any analysis proper is reached. The usual schematic tables for the systematic examination are omitted, the author considering this better pedagogically.

For those who may prefer this peculiar arrangement the book is to be recommended.

*Lunge's Technical Analysis.*—A wide range of subjects is presented by this little book, there being chapters on technical gas analysis, fuels and heating and on inorganic chemical

manufacturing. It goes without saying that in so small a compass these subjects can not be treated in detail. The book aims to answer the question as to what determinations are usually made in the examination of technical materials. To the average student it would be of little value, owing to the brevity of its descriptions, but the chemist of some training will find it excellent in pointing the way to the proper procedures in technical analysis.

CHARLES WILLIAM FOULK.

*A Handbook of the Trees of California.* By ALICE EASTWOOD, Curator of the Department of Botany, California Academy of Sciences. San Francisco. 1905. (Occasional Papers of the California Academy of Sciences, IX.) Pp. 80. Plates 52.

This is a popular manual of the native trees of California. The author's style is simple and clear. There is no waste of words and the descriptions of the species are in plain English, omitting as far as possible the use of latinized words so highly favored by some systematists. An interesting and most useful departure is the introduction of two artificial keys, one based upon leaf forms, the other on fruit forms. However, the prime excellence of the work depends upon the illustrations. Some of the illustrations are from the drawings of Dr. A. Kellogg, one of the founders of the California Academy of Sciences. The half-tone work is excellent. The trees of Washington and Oregon are included, as it was found that there were only a few not represented in California.

The trees of California are world-known and botanists everywhere will welcome this work.

ALBERT SCHNEIDER.

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#### SOCIETIES AND ACADEMIES.

##### THE BIOLOGICAL SOCIETY OF WASHINGTON.

THE 406th regular meeting of the Biological Society was held in the Assembly Hall of the Cosmos Club, November 25, 1905, with President Knowlton in the chair and 69 persons present.

The first paper of the evening was by Dr. L. O. Howard, presenting 'More Notes on the Yellow Fever Mosquito.' He said that the

next morning after presenting the former communication on the same subject before the society, he left Washington for New Orleans and Texas. At that time (October 28) the Texas quarantine against New Orleans had not been relieved, so that he was obliged to go to Texas first by way of St. Louis. He returned to New Orleans from Texas on November 6 and spent some days in the city studying the conditions that prevailed at that time and talking with the men who had charge of the victorious fight against the yellow fever, then just concluded. He gave a number of observations made by Doctor White, Doctor Richardson, Doctor Blue and other surgeons in the Public Health and Marine-Hospital Service who had been stationed in New Orleans during the summer, relative to the out-of-the-way breeding places in which the yellow fever mosquito had been found, and spoke especially of the new culicide discovered during the summer and which seems to be especially effective against mosquitoes, without having the deleterious properties of sulphur dioxid. Lantern slides were exhibited showing New Orleans breeding places, methods of fumigating houses, and the general characteristics of the portions of the city in which the epidemic had been severest. He also showed a few slides illustrating sanitary conditions at Panama.

In discussion of this paper, Dr. C. W. Stiles said that it is most interesting that our knowledge of the disease includes the facts of its transmission, but of its cause. The disease is handled by methods of prevention. The period of infection necessary to inoculation is known. The female mosquito must transmit the disease to man. In comparison, the best known ticks transmit disease to their progeny, then through them to the human patient. A recent German paper makes the assertion that malaria is transmissible to the offspring of the mosquito. A Paris paper makes the same statement of *Stegomyia*. This is doubted in this country. There are numerous men working on the identity of the yellow fever parasite. Many known Arthropoda are necessary for the transmission of certain diseases. Cholera may be transmitted by flies.